

03304" 2630400

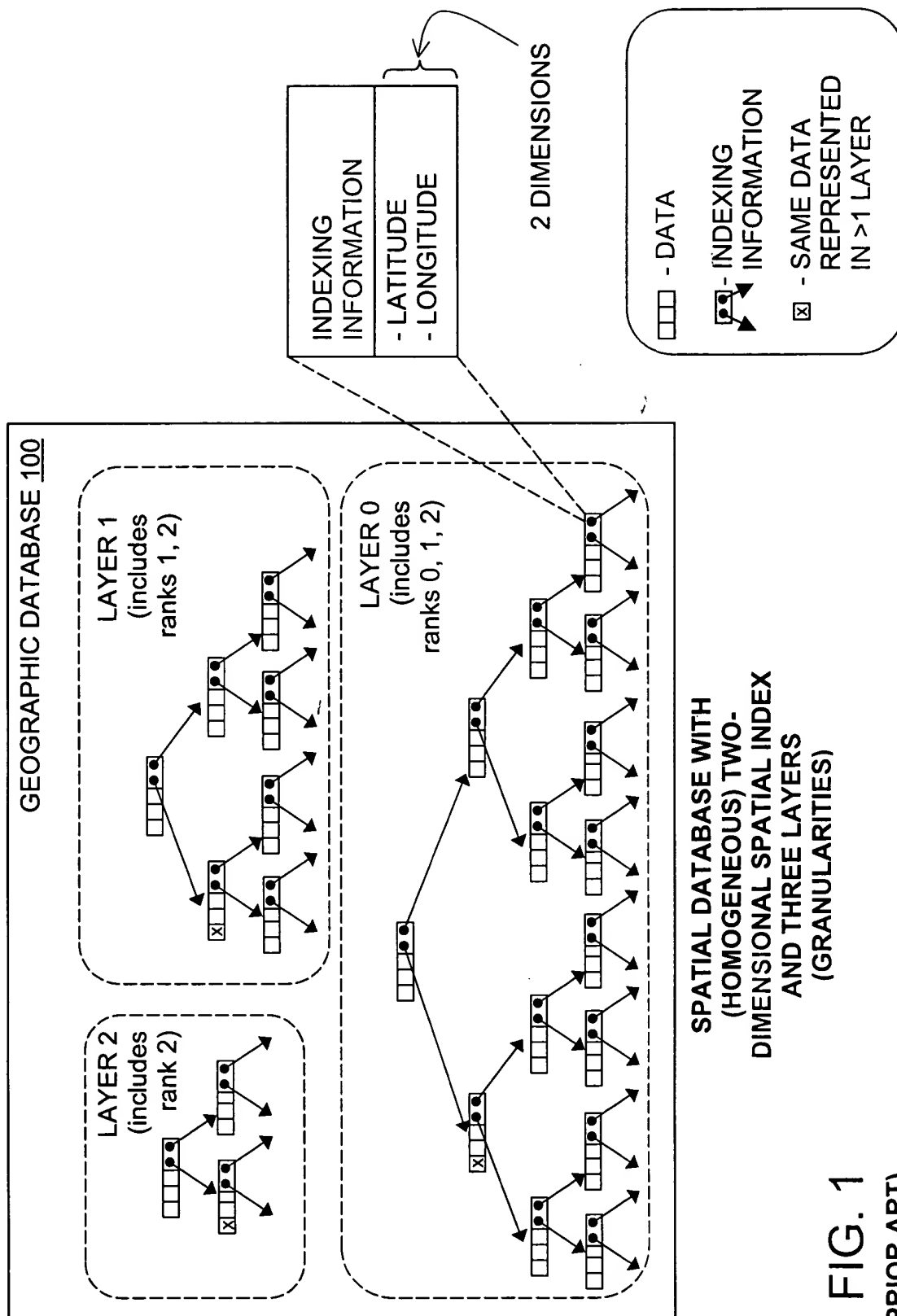
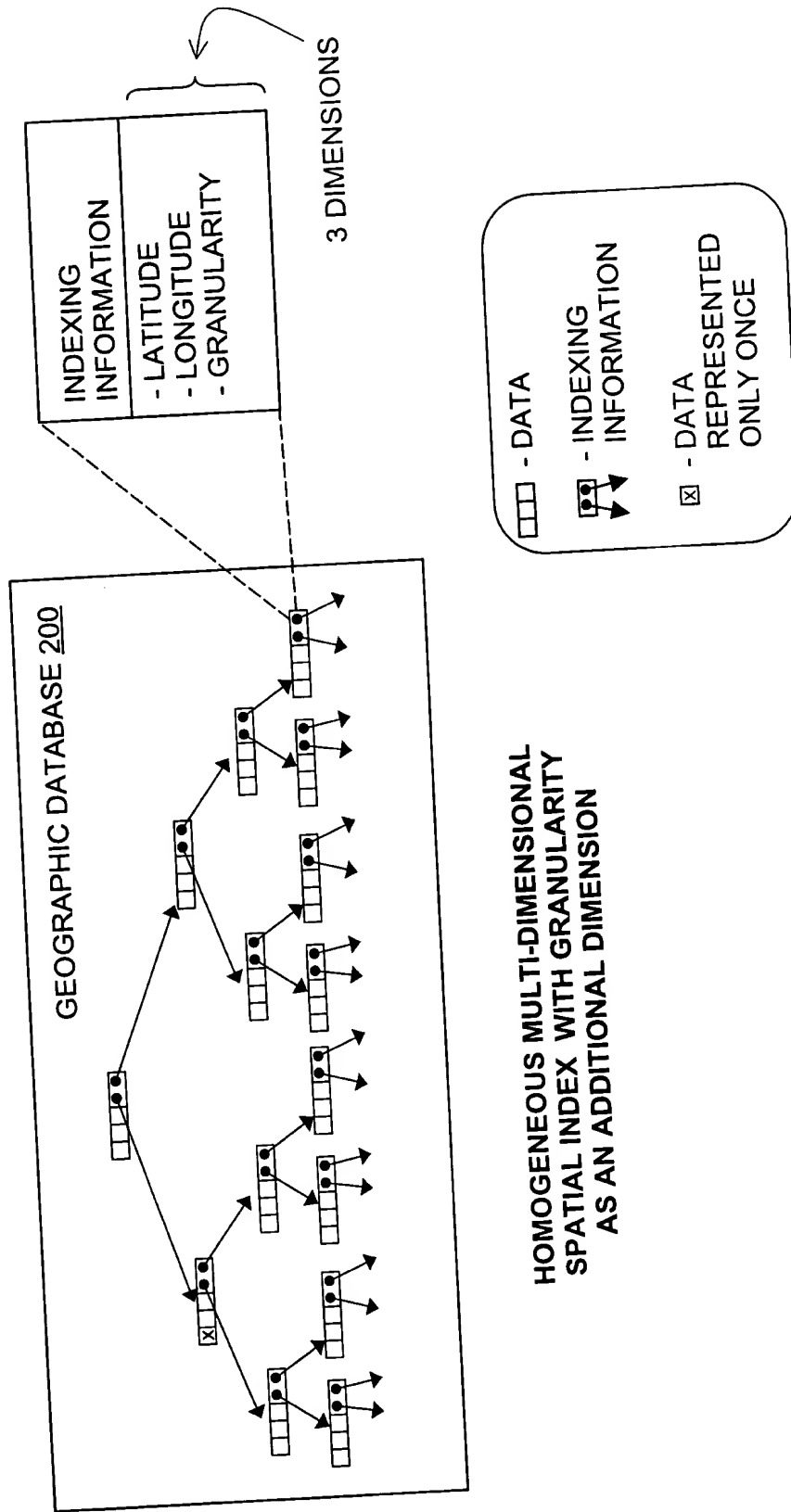


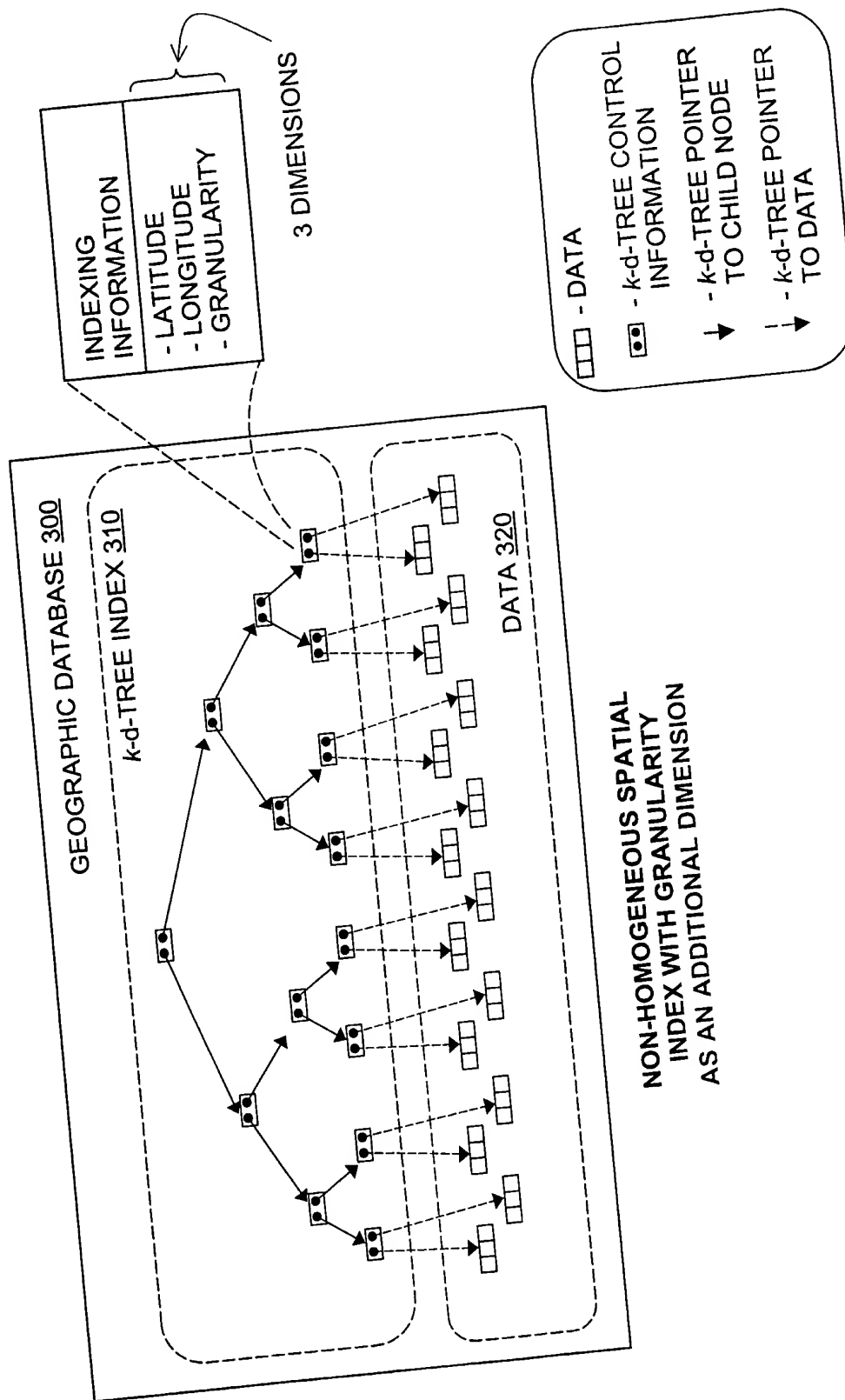
FIG. 1
(PRIOR ART)



HOMOGENEOUS MULTI-DIMENSIONAL
SPATIAL INDEX WITH GRANULARITY
AS AN ADDITIONAL DIMENSION

FIG. 2

$\begin{array}{ccccccc} \text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} \\ | & | & | & | & | & | & | \\ \text{C} & \text{C} & \text{C} & \text{C} & \text{C} & \text{C} & \text{C} \\ | & | & | & | & | & | & | \\ \text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} \end{array}$



GEOGRAPHIC DATABASE 300

k-d-TREE INDEX 310

DATA 320

NON-HOMOGENEOUS SPATIAL INDEX WITH GRANULARITY AS AN ADDITIONAL DIMENSION

**INDEXING
INFORMATION**

- LATITUDE
- LONGITUDE
- GRANULARITY

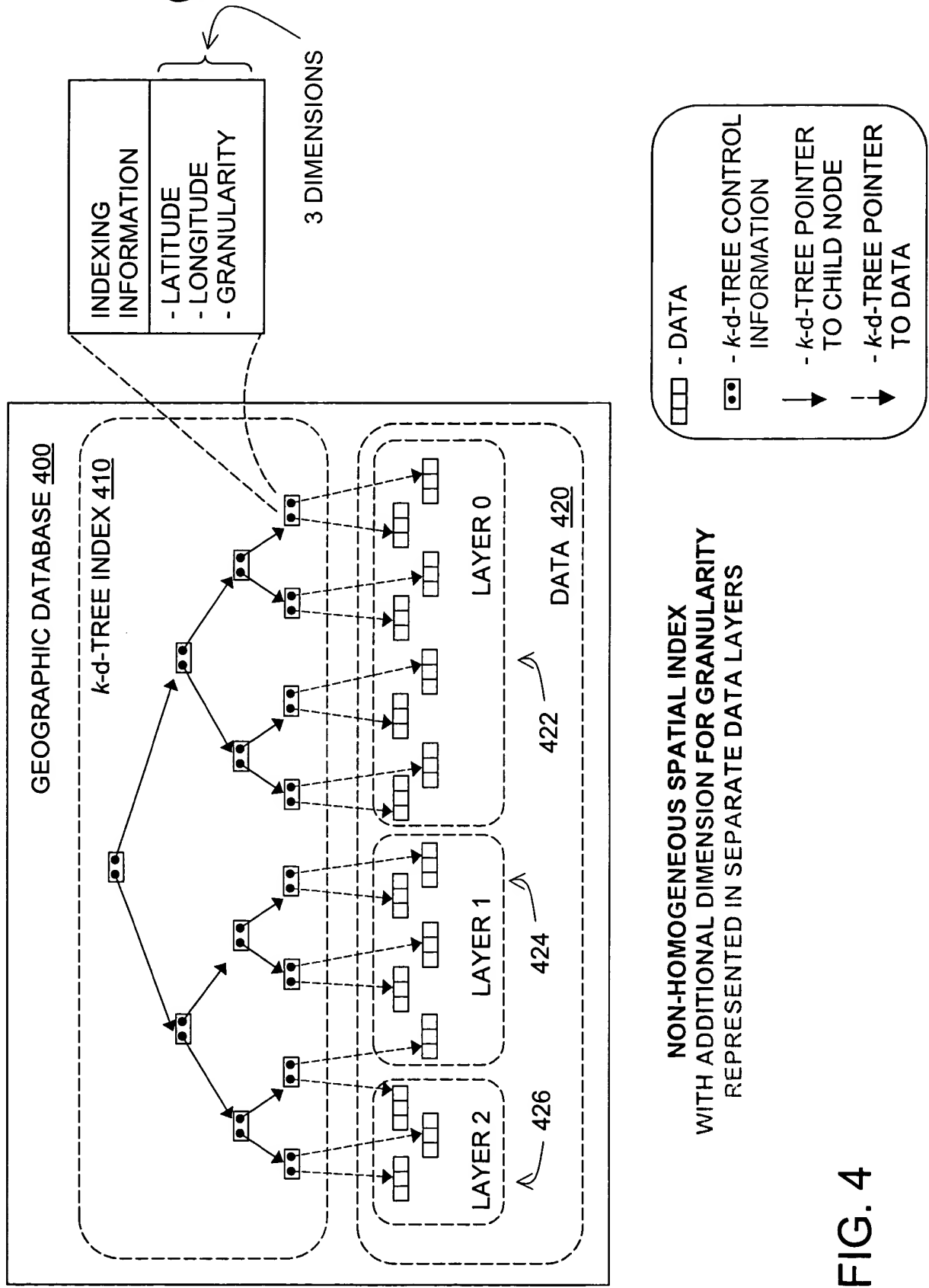
3 DIMENSIONS

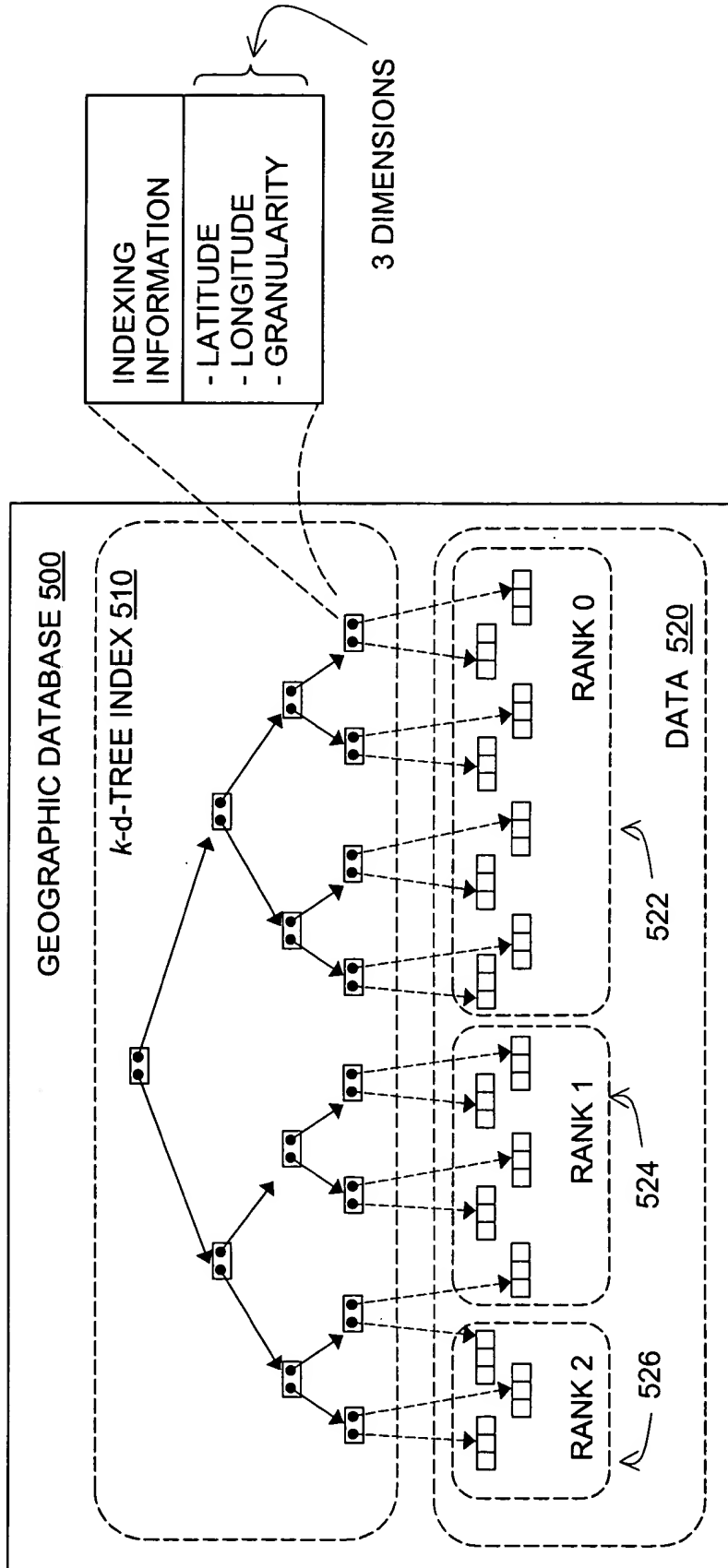
DATA - DATA

• k-d-TREE CONTROL INFORMATION

↓ - k-d-TREE POINTER TO CHILD NODE

! - k-d-TREE POINTER
TO DATA





NON-HOMOGENEOUS SPATIAL INDEX
WITH ADDITIONAL DIMENSION FOR GRANULARITY
REPRESENTED IN SEPARATE COLLECTIONS OF
RANKED DATA

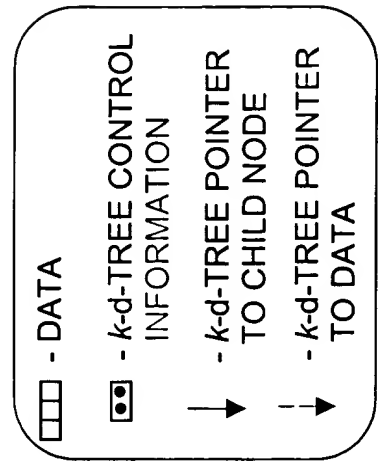
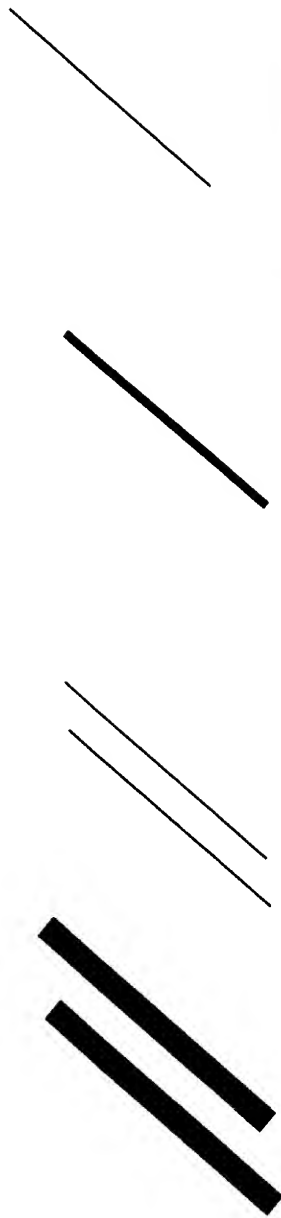


FIG. 5

0030T" 26690400

SCALE-DEPENDENT REPRESENTATIONS OF A
SPATIAL ENTITY



1:5,000

FIG. 6A



1:10,000

FIG. 6B



1:25,000

FIG. 6C



1:50,000

FIG. 6D

DISTANCE-DEPENDENT
REPRESENTATIONS OF A SPATIAL
ENTITY

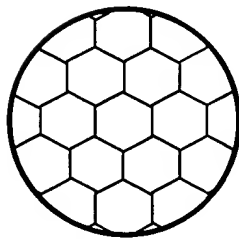


FIG. 7A

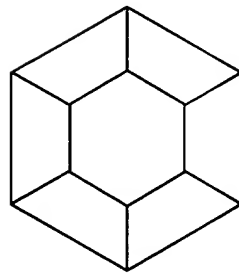


FIG. 7B

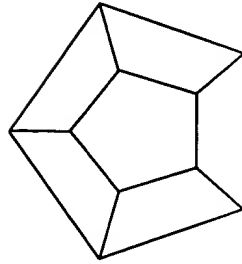


FIG. 7C

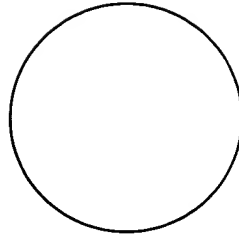


FIG. 7D

10,000 M

50,000 M

100,000 M